IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: Application of: Varsa et al. Attorney Docket: 944-001.083-1

Serial No.: 10/623,133 Group Art Unit: 2467

Filed: July 16, 2003 Examiner: Marcus Smith

For: **METHOD FOR ENABLING PACKET TRANSFER DELAY COMPENSATION IN MULTIMEDIA STREAMING**

Mailstop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

This Pre-Appeal Request for Review is filed in response to the final office action, mailed December 23, 2009, and to the Advisory Action, mailed March 10, 2010.

In the patent application, claims 1, 2, 4, 5, 7-11, 13, 15-17, 20-25, 27, 31, 33-35 and 37 are pending. In the final office action, all pending claims are rejected.

At section 4 of the office action, claims 1, 2, 4, 5, 7-8, 13, 16-17, 20-22, 27, 31, 33-35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable by *Harumoto et al.* (U.S. Patent Application Publication No. 2002/0004840 A1, which has been published as Patent No. 7,016,970 B2, hereafter referred to as *Harumoto*), in view of *Colavito et al.* (U.S. Patent Application Publication No. 2003/0152094, hereafter referred to as *Colavito*), and further in view of *Radha et al.* (U.S. Patent No. 6,700,893, hereafter referred to as *Radha*).

******If any fee and/or extension is required in addition to any enclosed herewith, please charge Account No. 23-0442.***

CERTIFICATE OF MAILING/TRANSMISSION (37 C.F.R. § 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being:

MAILING

☒ Deposited with the United States Postal Service with sufficient postage as first class Mail in an envelope addressed to the Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

FACSIMILE

☐ Transmitted by facsimile to the U.S. Patent and Trademark Office.

Marie E. Forte

Date: April 23, 2010

Signature
Marie E. Forte
(type or print name of person certifying)

A. Claimed Invention

It is respectfully submitted that, claim 1 includes the limitations of

1) receiving from the server pre-decoder buffering parameters to ensure that the client is able to play out the received packet stream without buffer violation when the packet stream is transmitted over a constant delay, reliable transmission channel; 2) estimating packet stream transfer delay variation indicative of a variation in time for transferring of the packet stream from the server to the client; 3) estimating parameters of a jitter buffer based on packet stream transfer delay variation; and 4) transmitting to the server information indicative of an aggregate of the pre-decoding buffering parameters and the jitter buffer.

Accordingly, the gist of the invention is: in order to ensure that the client is able to play out a packet stream without buffer violation, the server assumes that the packet stream is transmitted over a constant delay, reliable transmission channel. The server chooses pre-decoder buffering parameters and sends them to the client. The client modifies the pre-decoder buffering parameters by sending an aggregate of the pre-decoder buffering parameters and the jitter buffer estimated in the client.

B. The Cited References

At issue here is whether the combined teachings of *Harumoto*, *Colavito* and *Radha* disclose that the client sends the server an aggregate of the estimated jitter buffer and the parameters that are sent by the server.

In the final office action, the Examiner states that *Harumoto* discloses that the terminal sends its buffer and transmission capacity (S_target) and its time-delay (T_delay) to the server (p.3, first paragraph, of the office action); *Colavito* discloses an adaptive jitter buffer management system that updates the buffer threshold by calculating the average packet transit time over the network and uses that information to determine the jitter in the network in order to reduce playout delay and improve quality of service (p.3, third paragraph, of the office action); and *Radha* discloses that the client has a pre-decoder buffer and a buffer controller capable of estimating delay, jitter and bandwidth of the network, and that the server (transmitter) sends the parameters to the client before the client estimates the buffer and delay (p.4, second paragraph, of the office action).

Accordingly, sending the parameters to the client by the server is disclosed in *Radha*; and estimating the jitter buffer is disclosed in *Colavito*. *Harumoto* discloses the client sending S_target and T_delay to the server.

It is respectfully submitted that S_target (target value) is a value of stream data to be stored in the receiver buffer determined based on the entire capacity of the buffer (col. 11, lines 9-15 in *Harumoto*), and T_delay (delay time) is indicative of the period between the time client writes a head data of the stream to the buffer, reads the data and starts decoding or playing (col. 11, lines 18-20; Abstract). The target value and delay time are **not** the same as an aggregate of the jitter buffer and the parameters sent by the server. Thus, the combined teachings of *Harumoto*, *Colavito* and *Radha* do not disclose all the claimed limitations.

C. Rejection of Claim 1

In rejecting claim 1, the Examiner states that *Harumoto* discloses a method for receiving a packet stream. The Examiner admits that *Harumoto* fails to disclose estimating packet stream transfer delay variation indicative of a variation in time for transferring of the packet stream from the server to the client, but points to *Colavito* for disclosing an adaptive jitter buffer management system that updates the buffer threshold by calculating the average packet transit time over the network and uses that information to determine the jitter in the network in order to reduce playout delay and improve quality of service (Abstract; Figure 5, steps 506-512). The Examiner further admits that *Harumoto*, in view of *Colavito*, fails to disclose that the client receives pre-decoder buffer parameters from the server. The Examiner points to *Radha* for disclosing that the client has a buffer controller that estimates delay, jitter and bandwidth of the network (col. 12, lines 20-23), and that the server (transmitter) sends the parameters to the client before the client estimates the buffer and delay so as to allow the client to compensate for variations in the network (col.2, lines 35-42).

C.1 The Cited *Harumoto* Reference

The Examiner states that *Harumoto* discloses that the client transmits to the server information indicative of an aggregate of the pre-decoder buffering parameters and the jitter buffer (step 102 or step 108 in Figure 5). In particular, the Examiner points to *Harumoto* for disclosing that the terminal sends its buffer and transmission capacity (buffer and jitter size: S_target) and its time delay (packet stream transfer delay variation or T_delay in step 101).

As pointed out on p.3, third paragraph, of the Request for Reconsideration, filed February 22, 2010, (hereafter referred to as "Request"), as shown in Figure 5, *Harumoto* only disclose the client

determining S_target and T_delay in step 101 and transmitting S_target and T_delay in step 102. *Harumoto* discloses transmitting a new S_target in step 108. Thus, *Harumoto* only discloses that the client notifies the server of a target value (value of stream data to be stored in the receiver buffer) and a delay time (period between the time the head data of the stream data is written to the buffer to the stream data is started to be decoded or playout).

C.2 The Cited *Colavito* Reference

As pointed out on page 3, last paragraph, to page 4, fourth paragraph of the Request, *Colavito* discloses that a frame-release threshold value is used in the client to determine when to send data packets to the decoder (paragraph [0048]). This frame-release threshold value is determined in a method 500 as shown in Figure 5.

As shown in Figure 5, after the jitter buffer is initialized in step 502, new data packet is stored in the jitter buffer in step 504; the current packet waiting is estimated in step 506; the variation measure is calculated in step 508; the out-of-sequence error is calculated in step 510; the packet-based threshold value is calculated in step 512; the waiting time is compared in step 514; data packets of the current frame are transmitted to the decoder in step 516; and the frame-release threshold for a new frame of data is set in step 518 (paragraphs [0049] – [0062]).

Thus, *Colavita* only uses the calculated frame-release threshold to determine when to send new packet data to the decoder. The threshold value is updated based on the current measures and the variation measures of the packet waiting time and the out-of-sequence error.

In the Advisory Action, the Examiner emphasizes that, in the final office action, the Examiner equates *Colavito's* average packet transit time over the network as the estimated packet stream transfer delay variation.

It is respectfully submitted that the Examiner **errs** in equating the "average packet transit time over the network" to the "packet stream transfer delay variation indicative of a variation in time for transferring of the packet stream".

C.3 The Cited *Radha* Reference

Radha discloses a video receiver 130. The receiver 130 includes a decoder buffer 131 which comprises an integrated transport decoder (ITD) buffer and a delay budget controller 138. As pointed out on page 4, last paragraph, to page 5, fourth paragraph of the Request, the delay budget controller 138 includes a Realtime QoS characterization circuit 505 for continuously calculating and updating QoS characterization parameters using the round-trip delay, delay jitter and bandwidth

(Figure 5; col.11, lines 49-52). Occasionally, assistance with the calculations for the determination of the QoS characterization parameters may be needed from streaming video transmitter 110 (col.11, lines 62-65).

The Examiner states that *Radha* discloses that the client device has a pre-decoder buffer (ITD buffer), and *Radha* also discloses a server transmitting to the client parameter information before the client estimates the buffer and delay (col.2, lines 35-42). However, based on the description in col.2, lines 35-42 alone, it is not clear what the parameter information that server transmits to the client before the client estimates the buffer and delay is. Nevertheless, the parameter information is not the same as the S_target and T_delay sent from the client to the server as disclosed in *Harumoto*.

Likewise, the S_target and T_delay that are sent from the client to the server (*Harumoto*) are not the same as an aggregate of the parameters sent by the server and the jitter buffer estimated in the client.

C.4 The Combined Teachings in *Harumoto*, *Colavito* and *Radha*

As pointed out on page 6, Subsection A.4 of the Request, the cited *Harumoto*, *Colavita* and *Radha* references, used individually or in combination, do not disclose or suggest transmitting to the server information indicative of an aggregate of the pre-decoding buffering parameters and the jitter buffer, wherein the pre-decoding buffer parameters are received from the server.

As pointed out on page 6, Subsections B-D of the Request, *Harumoto*, in view of *Colavita* and further in view of *Radha*, fails to render independent claims 1, 13, 27 and 24 obvious. Dependent claims claims 2, 4, 5, 7-11, 15-17, 20-25, 31, 33, 35 and 37 are also distinguishable over the cited *Harumoto*, *Colavita*, *Radha*, *Deshpande* and *Schuster* references.

Thus, claims 1, 2, 4, 5, 7-11, 13, 15-17, 20-25, 27, 31, 33-35 and 37 are allowable. Early allowance of all pending claims is earnestly solicited.

Respectfully submitted,

Kenneth Q. Lao
Registration No. 40,061

Date: April 23, 2010

WARE, FRESSOLA, VAN DER SLUYS
& ADOLPHSON LLP
Bradford Green, Building 5
755 Main Street, PO Box 224
Monroe, CT 06468
(203) 261-1234